

BHUTAN ELECTRIC VEHICLE INITIATIVE: A STEP TOWARDS ZERO EMISSION

BHUTAN ELECTRIC VEHICLE INITIATIVE

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PRESENTATION AT THE BAQ CONFERENCE
COLOMBO NOV 2014



Outline

1. Rationale

2. Objectives

3. Legal and Policy Framework

4. Broad Strategies

5. EV Initiative and Five Year Plan

6. Action/Roll Out Plan

7. Challenges

RATIONALE

- DEVELOPMENT OBJECTIVE OF GNH AND ENVIRONMENT
- INCREASING IMPORT OF VEHICLES: VEHICULAR EMISSION
- ECONOMIC REASONS: GROWING TRADE DEFECIT AND FOSSIL FUEL IMPORT
- CLEAN AND CHEAP SOURCE OF ELECTRICITY:

OBJECTIVES

- To achieve Zero Emission in the Transport Sector:
- To make the capital city, Thimphu a Clean Green Electric City:
- To reduce import of fossil fuels and thereby reduce vehicular

OBJECTIVES Continued

- To sustain and reduce current account deficit due to fossil fuel import and
- To protect the environment through reduction in CO2 emissions and contribute towards global efforts to fight climate change, and
- To provide access to clean mobility for the poor and vulnerable sections of the society

LEGAL AND POLICY FRAMEWORK

- Constitution provides overall mandates for *environmental conservation, which includes reduction of pollution and emission;*
- NEPA 2007 provides legal basis for financial incentives for *reducing pollution and emission and penalties for pollution;*
- Waste Act provides legal basis for tax incentives for manufacturing environmental friendly technology, and *increase in customs and other duties for imports of products which generates large volumes of waste:*
- *EDP2010 provides policy frameworks for incentives for environmental friendly economic activities, and tax and other duties for otherwise.*
- *Bhutan's declaration to remain "Net Sink of Green House Gases" at the Conference of Parties (CoP15) held in Copenhagen, Denmark in 2009.*

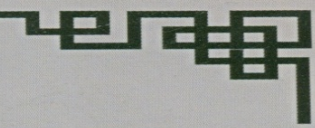
Broad Strategies

- Affordable Pricing
- Provide Fiscal Incentives:
- Create an Enabling Environment:
- Lead the way:
- Institutional Capacity Building;
- Promote Establishment of Local Conversion, assemble and Manufacturing of EVs:

EV INITIATIVE AND 11th FYP



ELEVENTH FIVE YEAR PLAN Volume I : Main Document



2013-2018

"Self-reliance and Inclusive Green Socio-economic Development"



SELF-RELIANCE

GOOD HEALTH
QUALITY EDUCATION
PERFORMANCE MANAGEMENT
FOOD SECURITY

CSIs
RATIONALIZATION

HERITAGE
CO-ORDINATION
CONSOLIDATION

DISASTER MANAGEMENT
EMPLOYMENT
GENDER
GREEN
DECENTRALIZATION
GOVERNANCE
GROWTH-CENTERS
INCLOSURE
DIVERSIFICATION

WATER SECURITY
SAFE SOCIETY

VALUE-ADDITION
IDENTITY

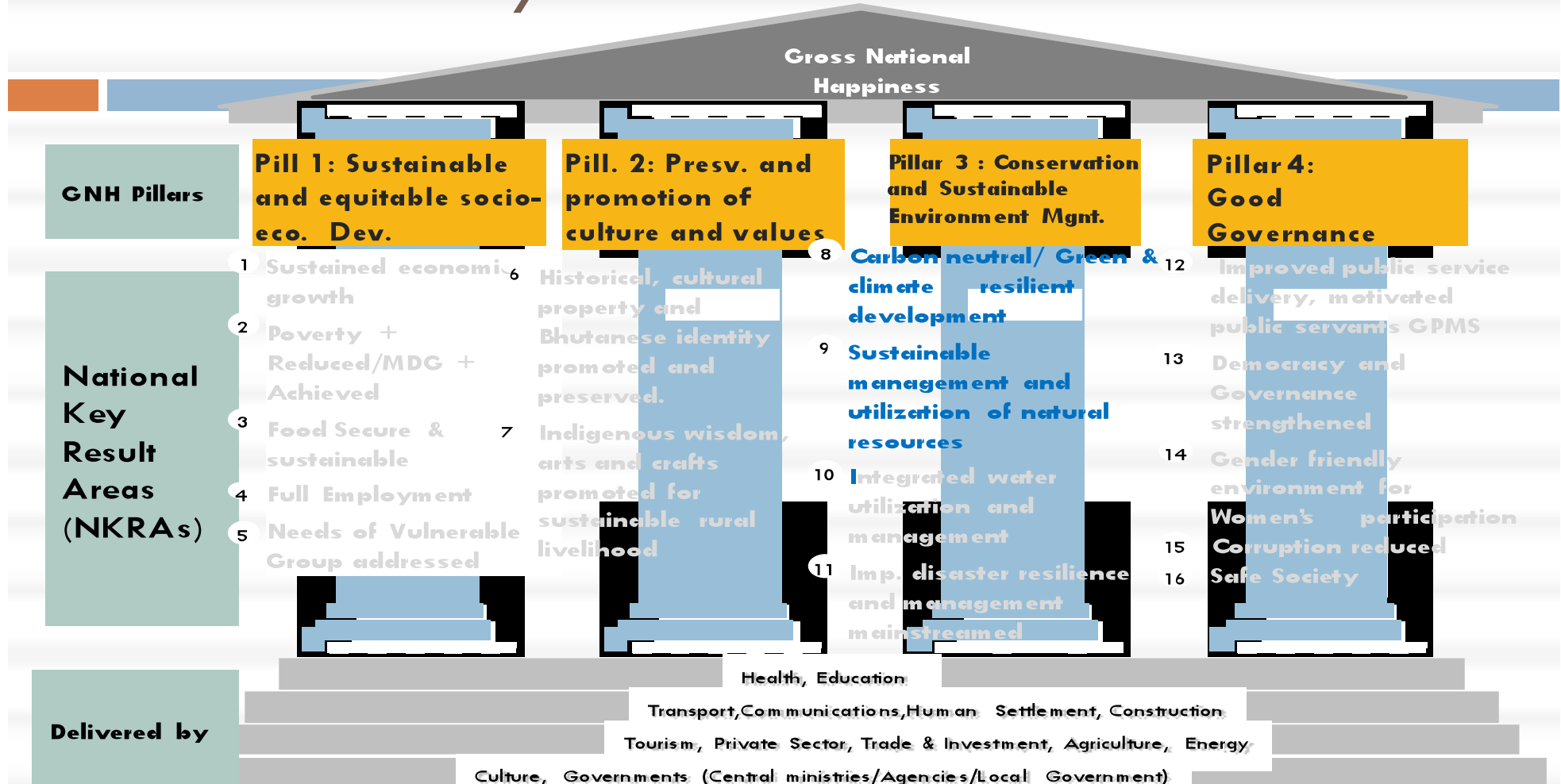
SOCIAL COHESION
POVERTY REDUCTION

Reducing inequality by enhancing the standard of living and the quality of life of the most vulnerable sections of our society



EV INITIATIVE AND 11th FYP

National Key Result Areas



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National Key Result Area

Carbon neutral/Green & climate resilient development

Sustainable utilization and management of Natural Resource

Water Security

Improved disaster resilience and management mainstreamed

Pillar 3: Conservation & Sustainable Utilization and Management of Environment

Key Performance Indicators

- i) Green House Gas Emission controlled: < 6309.6 Gg CO₂
- ii) Ambient air quality sustained or reduced
- iii) Perception of Ecological Issues (GNH Index) sustained: 69%

- i) Proportion of forest area under sustainable forest management : >12% (6.6 %)
- ii) Ecological footprint: Study to establish baseline & targets conducted
- iii) Population status of umbrella species (Tiger)

- i) Ambient water maintained within national standards: Standards revised to include new parameters of total hardness, grease and oil
- ii) Long term mean annual flow of entire country: 73000 m³

- i) No. of disaster response teams trained and equipped in DM
- ii) Response time (no. of hours within which emergency response time reaches site of disaster): Within 2 hours of disaster

EV INITIATIVE PLAN

■ **The Royal Government of Bhutan (RGoB) intends to formulate and implement a National Action Plan for Zero Emission country as follows:**

1. Thimphu, capital city, to be “clean electric city”
2. Adopt Sustainable Urban Transport System
3. Reduction of fossil fuel imports substantially by 2020
4. Enhance market share of EV substantially in 5 years
5. Explore establishing local conversion, assemble and manufacturing of EVs

EV FLEET USAGE/TARGET



Government Fleet

- Cabinet fleets
- Government Ministry and Agency fleet
- Protocol Service cars
- Police Car

Public Transport and Private fleets

- Public Transport in Thimphu (City Buses)
- Taxis
- School Buses
- Electric Trains



Tourism Sector

- Electric Vans for transporting tourist
- Opportunities for low carbon tourism
- Promoting EV adoption through first hand experiences



EV INITIATIVE ROAD MAP

EV Action Plan Roll Out:

- **Launch Different EVs**
- **To develop a network of nationwide quick charging infrastructure**
- **To promote EV fleet programs for government, public & private sector**
- **Study Feasibility of Introducing Electric Trains**
- **To implement tax incentives, subsidies and carbon credit scheme to promote EVs**



EV INITIATIVE ROAD MAP

Kick-off

Phase 1 2014

Phase 2



Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2015-2018
Phase I: Focus on Thimphu (capital) – Paro (airport) – Phuentsholing (border-town)											Nationwide Implementation

Policy Initiation and Infrastructure Development

Installation of Phase 1: Quick Chargers in Thimphu-Paro-Phuentsholing

Phase 2 & 3
Expansion of EV Quick Charging infrastructure – total of 150 nationwide

EV Fleet Usage

EV Fleet for Government Fleet e.g. Police Car and Public Transport

Fleet expansion

EV for Tourism Sector

Fleet expansion

EV INITIATIVE CHALLENGES

Financial

- Funding for Infrastructure and Government Fleets
- Low cost financing to overcome exorbitant upfront costs of EV ownership

Technical

- Limited Knowledge/Experiences
- Consumer Confidence due to technological challenges like driving range per charge
- Identifying and installing appropriate charging schemes and harmonization of different models
- Maintenance and servicing expertise
- Durability and reliability in a rugged terrain
- Battery Life and Disposal/Management/Recycle

TASHI DELEK!

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